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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

KENNY CHANG

Application No.: 10/547,688

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Title: ONE PIECE SHIM

Confirmation No.: 7107

Group Art Unit: 1798

Examiner: PIZIALI, ANDREW T.

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BRIEF ON APPEAL

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INTRODUCTION

This Appeal is from a final Office Action mailed December 30, 2010, finally rejecting claims 1-10 and 23-32 of the above-identified patent application. This brief is being filed furtherance of the Notice of Appeal filed on May 2, 2011.

I. Real Party in Interest - 37 C.F.R. §41.37(c)(1)(i)

The real party in interest for this Appeal and the present patent application is Messier-Bugatti, by way of an Assignment recorded on May 31, 2006, in the U.S. Patent and Trademark Office at Reel 017717, Frame 0979.

II. Statement of Related Appeals and Interferences - 37 C.F.R. §41.37(c)(1)(ii)

There are presently no appeals or interferences known to Appellant, Appellant's representatives, or the Assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims - 37 C.F.R. §41.37(c)(1)(iii)

Claims 1-10 and 23-32 are pending in the application. Claims 11-22 have been cancelled without prejudice or disclaimer to the subject matter recited therein. Claims 1-10 and 23-32 are rejected. The rejection of claims 1-10 and 23-32 is appealed herein. Claims 1 and 23 are independent. Claims 2-10 depend from claim 1. Claims 24-32 depend from claim 23.

IV. Status of Amendments - 37 C.F.R. §41.37(c)(1)(iv)

A Preliminary Amendment was filed on September 2, 2005 and February 23, 2006. An Amendment was filed on April 29, 2009. An Appeal Brief was filed on July 6, 2010. A Request for Reconsideration was filed on December 17, 2010. An Amendment After Final was filed on March 30, 2011. A Notice of Appeal was filed on May 2, 2011.

V. SUMMARY OF CLAIMED SUBJECT MATTER - 37 C.F.R. §41.37(c)(1)(v)

A. Features of the Invention

A shim member according to the present invention has a generally flattened annular form with opposing first and second surfaces. At least one of the surfaces is shaped to at least

partially define radially extending gas flow paths for communicating the interior space of the shim member with an exterior. In one embodiment, the shim member is similar in radial dimensions to the annular preforms adjacent thereto. That is, the shim member can be provided with a similar interior diameter and a similar exterior diameter to the annular preforms.

In one embodiment, the shim member can be made from a metallic material having openings formed therethrough, including, without limitation, a metal mesh material. The metallic material may be bare (i.e., without a coating, including without a debonding coating), which makes manufacture and refurbishment correspondingly simpler and less expensive.

In general, a shim member according to an embodiment of the present invention has certain fundamentally useful characteristics. A one-piece or otherwise unitary construction greatly facilitates the loading of a process chamber with stacked annular preforms, in comparison to the use of several individual spacer members between every annular preform in the stack. Conventional arrangement requires manual placement of each conventional spacer member. Moreover, because the conventional spacer member is usually made from a highly fragile material such as alumina, each spacer member must be handled with great care during an already lengthy and tedious manual process to try to avoid breakage. With the use of a one-piece shim member, a single action of positioning the shim member replaces the several placement actions of positioning individual spacer members.

In addition, the structure of the one-piece shim member better supports the weight of the one or more annular preforms stacked thereon over a greater area, in comparison to the conventional use of individual spacer members. In particular, in one embodiment, the radial width of the annular one-piece shim member can be about equal to or slightly narrower than that of the annular preforms. As a result, each annular preform is less deformed after being removed from the process chamber. This means that less remedial machining is required after the densification process to obtain a usefully undeformed surface.

In one embodiment, the one-piece shim member provides radially extending channels or other features on one or both surfaces thereof that, in net effect, at least partly define gas flow paths communicating the radially interior side of the one-piece shim member with the radially exterior side thereof. It will be appreciated that the collective cross-sectional area of the gas flow paths presented can be affected, for example, by either adjusting the size of each

channel or the like, or by providing more of the channels or the like. A deciding factor in this regard is maintaining a desirable level of support for the overlying annular preform(s).

In one embodiment, the one-piece shim member can be made from a material that can withstand temperatures of up to about 1000 deg. C., and preferably (for safety purposes) up to about 1200 deg. C. to 1400 deg. C. The selected material is preferably minimally reactive with the preform at the operational temperatures mentioned. Examples of materials appropriate for the one-piece shim member as contemplated include metallic materials such as, without limitation, stainless steel, Inconel alloy, titanium, molybdenum, tantalum, and tungsten.

FIG. 3a is a plan view of another example of an annular shim member 600 according to the present invention, and FIG. 3b is a corresponding elevational view including a magnified partial portion thereof. Annular shim member 600 is generally made from a perforated metallic material having an open area of about 20% to about 80%. In a particular example thereof, annular shim member 600 is made from a metallic mesh material. Annular shim member 600 may be formed by cutting an appropriately sized annular form from a sheet of stock material. Any appropriate industrial cutting method can be used, including, without limitation, computer-controlled laser cutting.

FIGS. 3a and 3b illustrate an example of the use of a mesh material to make annular shim member 600. As can be clearly seen in the magnified portion of FIG. 3b, the mesh material be a woven mesh manufactured according to known methods, especially including crimped weave methods. A crimped weave mesh refers to preshaping (i.e., crimping) the wires in at least one direction in the mesh. For example FIG. 3b illustrates the crimped wire 602 relative to the wires 604. Thus, the undulations in wire 602 present, in effect, open spaces adjacent to transverse wires 604. These open spaces (which are interconnected over the area of annular shim member 600) collectively at least partly define a plurality of radially extending gas flow paths for communicating a radially interior side of the member 600 with a radially exterior side of the member 600, the annular shim member 600 being substantially planar.

In one embodiment, the thickness of the annular shim member 600 is about twice the diameter of a wire 602 or 604. In one example, the overall thickness of annular shim member 600 is between about 1 mm and about 6 mm. In one embodiment, annular shim member 600 has significantly different thermal expansion characteristics than the annular preforms so adhesions therebetween are negligible, and the debonding coating of the carbon annular shim

can be omitted. Furthermore, the metallic mesh can be easily and simply reconditioned by, for example, sandblasting.

B. The Independent Claims on Appeal

The following explanation of the claimed subject matter, with reference to the specification and drawings, is for explanation only. The invention is not in any way limited to the disclosed embodiments. In addition, the claims, including the dependent claims, each stand on their own merit.

1. Claim 1

Independent claim 1 recites an annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough (*see, annular shim 600 shown in FIGS. 3A and 3B and lines 6-11 at page 8 of the specification*), wherein the member is made from a metallic material (*see, lines 9-16 at page 8 of the specification*) and at least partly defines a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member (*see, lines 20-24 at page 8 of the specification and lines 1-6 at page 9 of the specification*), the annular shim member being substantially planar (*see, FIGS. 3A and 3B and lines 6-19 at page 8 of the specification*).

2. Claim 23

Independent claim 23 recites an annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough (*see, annular shim 600 shown in FIGS. 3A and 3B and lines 6-11 at page 8 of the specification*), wherein the member is made from a metallic material (*see, lines 9-16 at page 8 of the specification*) and at least partly defines a plurality of radially extending gas flow paths (*see, lines 20-24 at page 8 of the specification and lines 1-6 at page 9 of the specification*), the annular shim member being substantially planar (*see, FIGS. 3A and 3B and lines 6-19 at page 8 of the specification*).

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL – 37 C.F.R. § 41.37(c)(1)(vi)

In the December 30, 2010 Final Office Action (hereinafter "the Final Office Action"), Claims 1-6, 8-10, 23-28 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 2,900,182 to Hinks (hereinafter "Hinks") in view of U.S. Patent No. 3,958,840 to Hickox (hereinafter "Hickox"). Claims 4, 5, 7, 26, 27 and 29 were

rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 2,900,182 to Hinks (hereinafter "Hinks") in view of U.S. Patent No. 3,958,840 to Hickox (hereinafter "Hickox") and further in view of U.S. Patent No. 4,227,858 to Donguy (hereinafter "Donguy"). Claims 1-6, 8-10, 23-28 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,958,840 to Hickox (hereinafter "Hickox") in view of U.S. Patent No. 2,900,182 to Hinks (hereinafter "Hinks"). Claims 4, 5, 7, 26, 27 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,958,840 to Hickox (hereinafter "Hickox") in view of U.S. Patent No. 2,900,182 to Hinks (hereinafter "Hinks") and further in view of U.S. Patent No. 4,227,858 to Donguy (hereinafter "Donguy"). Thus, the grounds of rejection to be reviewed on appeal are:

1) whether claims 1-6, 8-10, 23-28 and 30-32 are obvious under 35 U.S.C. §103(a) over Hinks in view of Hickox;

2) whether claims 4, 5, 7, 26, 27 and 29 are obvious under 35 U.S.C. §103(a) over Hinks in view of Hickox and further in view of Donguy;

3) whether claims 1-6, 8-10, 23-28 and 30-32 are obvious under 35 U.S.C. §103(a) over Hickox in view Hinks;

4) whether claims 4, 5, 7, 26, 27 and 29 are obvious under 35 U.S.C. §103(a) over Hickox in view of hinks and further in view of Donguy;

VII. ARGUMENT - 37 C.F.R. §41.37(c)(1)(vii)

A. The Law Regarding Factual Inquiries to Determine Obviousness/Nonobviousness Under 35 U.S.C. § 103(a)

Several basic factual inquiries must be made to determine obviousness or non-obviousness of patent application claims under 35 U.S.C. § 103. These factual inquiries are set forth in Graham v. John Deere Co., 383 US 1, 17, 148 USPQ 459, 467 (1966):

Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined. Application of this test, however, involves a factual inquiry. As stated by the Federal Court in In re Ochiai, 71 F.3d 1565, 37 USPQ2d 1127, 1131 (Fed. Cir. 1995):

[T]he test of obviousness vel non is statutory. It requires that one compare the claim's subject matter as a whole with the prior art to which the subject matter pertains. 35 U.S.C. § 103.

The inquiry is thus highly fact-specific by design.... When the references cited by the Examiner fail to establish a prima facie case of obviousness, the rejection is improper and will be overturned. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) (emphasis added).

In rejecting claims under 35 U.S.C. § 103(a), an Examiner bears an initial burden of presenting a *prima facie* case of obviousness. A *prima facie* case of obviousness is established only if there is a suggestion or motivation to combine reference teachings; a reasonable expectation of success; and the prior art references, when combined, teach or suggest all the claim limitations. If an Examiner fails to establish a *prima facie* case, a rejection is improper and will be overturned. *See* In re Rijckaert, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993). "If examination ... does not produce a prima facie case of unpatentability, then without more, the Applicant is entitled to the grant of the patent." In re Oetiker, 977 F.2d 1443, 1445-46, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

Furthermore, as stated in the United States Supreme Court decision in *KSR Int'l. Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007), "Often, it will be necessary for a court to look to interrelated teachings of multiple patents...in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be explicit." *Id.* at slip opinion 14, 82 USPQ2d at 1396, citing *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

B. Rejection Under 35 U.S.C. § 103(a) of Claims 1-6, 8-10, 23-28 and 30-32 over Hinks in view of Hickox

1. The Cited References

a) Hickox

Hickox discloses a flexible bearing (flexible bearing 5 shown in FIGS. 1 and 2 in Hickox) constructed of layers of elastomer and rigid shims (shims 6 shown in FIGS. 1 and 2 in Hickox), alternately stacked and bonded together. At least some of the rigid shims are

replaced with flexible reinforcements of refractory cloth or wire screen (wire screen 9 shown in FIG. 3 in Hickox). The reinforcing material minimizes the number of rigid shims required (see, Abstract in Hickox and col. 2, lines 20-37 in Hickox). The wire screen 9 may be welded or soldered at intersections of the strands. The wire screen 9 provides sufficient strength to maintain dimensional stability of the elastomer under heavy loads that may be imposed upon it by propulsive gases in combination with stresses impressed by hydraulic actuators (see, col. 2, lines 29-37 in Hickox).

b) Hinks

Hinks discloses laminated bearings having shear spring properties. The bearings have alternate layers of metal and elastomer bonded to each other (see, claim 1 in Hinks). FIG. 7 in Hinks shows the bearing being provided with a central aperture that is defined by the alternate layers of elastomer and metal (see, col. 9, lines 30-42 in Hinks).

2. Claims 1-6, 8-10, 23-28 and 30-32 are not obvious over Hinks in view of Hickox

a) Claim 1

Independent claim 1 is directed to an annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough, wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Claim 1 further specifies that the annular shim member is substantially planar.

As conceded in the Final Office Action, Hinks does not disclose the metallic members having a plurality of openings. However, the Examiner contends that Hickox discloses that it is known in the thrust bearing art to construct metallic members with a wire screen construction to improve production and lower costs, and that it would have been obvious to one of ordinary skill in the art to make the member in Hinks with the wire screen disclosed by Hickox. Appellant respectfully disagrees.

Hickox discloses a flexible bearing (flexible bearing 5 shown in FIGS. 1 and 2 in Hickox) constructed of layers of elastomer and rigid shims (shims 6 shown in FIGS. 1 and 2 in Hickox), alternately stacked and bonded together. At least some of the rigid shims are replaced with flexible reinforcements of refractory cloth or wire screen (wire screen 9 shown

in FIG. 3 in Hickox). The reinforcing material minimizes the number of rigid shims required (see, Abstract in Hickox and col. 2, lines 20-37 in Hickox). The wire screen 9 may be welded or soldered at intersections of the strands. The wire screen 9 provides sufficient strength to maintain dimensional stability of the elastomer under heavy loads that may be imposed upon it by propulsive gases in combination with stresses impressed by hydraulic actuators (see, col. 2, lines 29-37 in Hickox).

As can be seen in FIG. 3 of Hickox, all of the segments of the mesh 9 are welded at intersections 4 (see, col. 2, lines 41-43 in Hickox). Therefore, mesh 9 does not have a plurality of radially extending gas flow paths for communicating a radially interior side of mesh 9 with a radially exterior side of mesh 9. Indeed, the presence of welds at intersection 4 of wire mesh 9 would not allow a flow of gas to pass radially above the first surface or below the second surface.

In response to the arguments filed on December 17, 2010, the Examiner refers to FIG. 3 in Hickox and contends that the intersection 4 are knuckles that protrude to provide channels that at least partly define radially extending flow paths. Appellant respectfully disagrees.

There is nothing in Hickox that discloses that the intersections 4 are knuckles much less that the intersections 4 are protruding. FIG. 3 does not show that intersections 4 are protruding. FIG. 3 merely depicts vertical wires and horizontal wires 9 that are connected/welded at intersections 4. Clearly, FIG. 3 is simply a top view of the wire screen and as such does not provide any information as to the presence of protruding knuckles. One of ordinary skill in the art when reviewing FIG. 3 and the related description would not conclude that the intersections 4 are protruding.

Along these lines, *per* MPEP 2125, " [w]hen the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value." Emphasis added. Hickox does not disclose that its drawings are to scale. Nor does Hickox provide any information as to the size of the intersections 4 and the wire screen 9. Thus, it cannot be concluded from FIG. 3 of Hickox that the intersections 4 are protruding, let alone that the intersections 4 provide channels that at least partly define radially extending flow paths, as contended by the Examiner.

In the Advisory Action dated April 7, 2011, the Examiner further asserts that Hickox discloses that the intersections are the result of welding or soldering. The Examiner is of the

opinion that soldering would necessarily add material (solder) to the knuckle locations and thus the knuckles would necessarily protrude. Appellant respectfully disagrees.

Even though the intersections are soldered, this does not necessarily imply that the intersections would protrude. Indeed, when performed in a certain way with an appropriate strand, soldering can provide intersections that do not protrude. In any case, there is nothing in Hickox to indicate or suggest that the intersections are protruding.

Furthermore, the Examiner contends that Hickox discloses that the strands of the mesh may be woven such that intersecting strands are wrapped around each and the intersections necessarily protrude at the location where the strands wrap each other. Appellant respectfully disagrees.

Hickox, in col. 2, lines 29-37, merely refers to the cloth being of a special weave wherein intersecting strands are wrapped around each other. Hickox does not refer to the screen. Indeed, hickox states that layers 7 of elastomer have intermediate layers 8 of open-weave reinforcing means, such as wire screen 9, expanded metal 10, refractory cloth, or plastic netting. In discussing the weave configuration, Hickox refers to the cloth and not to the wire screen 9. Hickox refers to a cloth having a weave where the strands are wrapped around each other. However, a cloth is completely different from wire screen 9 in Hickox.

Furthermore, Hickox does not disclose a "substantially planar" wire mesh. Hickox discloses a frusto-conical annular wire screen. A frusto-conical annular wire is completely different from a substantially planar wire screen.

In addition, even if hypothetically the wire mesh of Hickox were disposed within the alternating rubber layers of Hinks, the structure of the wire mesh in Hickox would further prevent any radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Indeed, even if the wire mesh of Hickox were to be placed between two opposite layers, because the wire mesh of Hickox does not have protrusions, there would be necessarily no radial paths as claimed. Moreover, because of the soft nature of rubber, the rubber layer would further fill in the openings within the wire mesh of Hickox and thus further prevent any gas flow paths.

In addition, there is no suggestion, motivation or any objective reason to combine Hickox and Hinks as suggested by the Office. Clearly, there is no reason for one of ordinary skill in the art to use the wire screen in Hickox in place of the metallic layers in the laminated bearings of Hinks, as the metal and elastomer layers in Hinks are bonded to each other in order to provide desired loading characteristics that are needed in bearings.

In fact, Hinks states, in col. 2, lines 25-30, that "in order to permit high unit loadings with negligeable compression and to prevent extrusion of the rubberous material from between the plates, while allowing satisfactory deflection characteristics, the bearing must be designed to comply with certain dimensional ratios which have been found to be controlling in such design." (Emphasis added).

Therefore, Hinks teaches against using metallic plates having openings, otherwise the rubber between the metallic plates would extrude through the opening. Hinks teaches that this is undesirable because this would alter the deflection characteristics of the load bearing. Furthermore, if metallic plates with openings (such a wire mesh) were to be used instead of the metallic plates in Hinks, due to the presence of the openings one rubber layer will be able to come in contact with another rubber layer through the openings in the wire mesh and this would increase the overall compression of the load bearings which is indicated in Hinks as being undesirable. Therefore, one of ordinary skill in the art would not be motivated to provide a wire mesh plate in place of the metallic layer or plates of Hinks as this would destroy the intended function of the load bearing in Hinks.

In response to the arguments filed on December 17, 2010, the Examiner contends that "Hinks refers to the prevention of rubber material extruding 'from between the plate' due to compressive force" and thus asserts that "there is no teaching or suggestion that the use of metallic plates with opening would result in the elastomeric material extruding from the plate." *See* Final Office Action at page 10. Appellant respectfully disagrees.

Appellant refers to the statement in col. 2, lines 25-30 in Hinks to specifically show that a rubber material can extrude through an opening be it on the side of plates or through an opening within the plates. If Hinks is already putting extra care for selecting appropriate dimensions to prevent extrusion of rubber between the plates, Hinks would in effect be led to not select plates having openings to avoid extrusion of rubber through the openings. Therefore, one of ordinary skill in the art would certainly not use plates with metallic openings much less a wire mesh between compressed rubber. This clearly teaches away from providing a wire mesh plate in place of the metallic layer or plates of Hinks as this would destroy the intended function of the load bearing of Hinks.

Furthermore, even if, *arguendo*, one were to make the metallic plates in Hinks with the wire screen disclosed by Hickox, which Applicant does not concede, as stated above, the wire mesh of Hickox being disposed between rubber layers would certainly prevent the formation of a plurality of radially extending gas flow paths for communicating a radially

interior side of the member with a radially exterior side of the member. Furthermore, the rubber being in contact with the wire mesh would prevent any radial flow of gas as the wire mesh would not define a plurality of radially extending gas flow paths.

Consequently, for at least the above reasons, neither Hinks nor Hickox, alone or in combination, disclose, teach or suggest the subject matter recited in claim 1. Therefore, Appellant respectfully submits that claim 1 is patentable over the purported combination of Hinks and Hickox.

Therefore, for at least the above reasons, Appellant respectfully submits that claim 1 is patentable over Hinks in view of Hickox. Thus, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §103(a) over Hinks in view of Hickox be withdrawn.

b) Claim 23

Independent claim 23 is directed to an annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough, wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths, the annular shim member being substantially planar.

Claim 23 is patentable over Hinks in view of Hickox for at least similar reasons provided above with respect to claim 1.

Hickox clearly does not disclose, teach or even suggest radially extending gas flow paths as claimed. Claim 23 requires that the shim member at least partly defines a plurality of radially extending gas flow paths. As can be clearly seen in FIG. 3 of Hickox, all of the segments of the mesh 9 are welded at intersections 4, and offer no pathways for gas flow above or below the wires of the mesh 9.

In response to the arguments filed on December 17, 2010, the Examiner refers to FIG. 3 in Hickox and contends that the intersection 4 are knuckles that protrude to provide channels that at least partly define radially extending flow paths. Appellant respectfully disagrees.

There is nothing in Hickox that discloses that the intersections 4 are knuckles much less that the intersections 4 are protruding. FIG. 3 does not show that intersections 4 are protruding. FIG. 3 merely depicts vertical wires and horizontal wires 9 that are connected/welded at intersections 4. Clearly, FIG. 3 is simply a top view of the wire screen and as such does not provide any information as to the presence of protruding knuckles. One of ordinary skill in the art when reviewing FIG. 3 and the related description would not conclude that the intersections 4 are protruding.

Along these lines, *per* MPEP 2125, " [w]hen the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value." Emphasis added. Hickox does not disclose that its drawings are to scale. Nor does Hickox provide any information as to the size of the intersections 4 and the wire screen 9. Thus, it cannot be concluded from FIG. 3 of Hickox that the intersections 4 are protruding, let alone that the intersections 4 provide channels that at least partly define radially extending flow paths, as contended by the Examiner.

In the Advisory Action dated April 7, 2011, the Examiner asserts that Hickox discloses that the intersections are the result of welding or soldering. The Examiner is of the opinion that soldering would necessarily add material (solder) to the knuckle locations and thus the knuckles would necessarily protrude. Appellant respectfully disagrees.

Even though the intersections are soldered, this does not necessarily imply that the intersections would protrude. Indeed, when performed in a certain way with an appropriate strand, soldering can provide intersections that do not protrude.

Furthermore, the Examiner contends that Hickox discloses that the strands of the mesh may be woven such that intersecting strands are wrapped around each and the intersections necessarily protrude at the location where the strands wrap each other. Appellant respectfully disagrees.

Hickox, in col. 2, lines 29-37, merely refers to the cloth being of a special weave wherein intersecting strands are wrapped around each other. Hickox does not refer to the screen. Indeed, hickox states that layers 7 of elastomer have intermediate layers 8 of open-weave reinforcing means, such as wire screen 9, expanded metal 10, refractory cloth, or plastic netting. In discussing the weave configuration, Hickox refers to the cloth and not to the wire screen 9.

Furthermore, Hickox does not disclose a "substantially planar" wire mesh. Hickox discloses a frusto-conical annular wire screen. A frusto-conical annular wire is completely different from a substantially planar wire screen.

In addition, even if hypothetically the wire mesh of Hickox were disposed within the alternating rubber layers of Hinks, the structure of the wire mesh in Hickox would not define a plurality of radially extending gas flow paths. Indeed, even if the wire mesh of Hickox were to be placed between two opposite layers, because the wire mesh of Hickox does not have protrusions, there would be necessarily no radial extending flow paths as claimed.

Moreover, because of the soft nature of rubber, the rubber layer would further fill in the openings within the wire mesh of Hickox and thus further prevent any gas flow paths.

In addition, as stated above with respect to claim 1, there is no suggestion, motivation or any objective reason to combine Hickox and Hinks as suggested by the Office. Clearly, there is no reason for one of ordinary skill in the art to use the wire screen in Hickox in place of the metallic layers in the laminated bearings of Hinks, as the metal and elastomer layers in Hinks are bonded to each other in order to provide desired loading characteristics that are needed in bearings.

In fact, Hinks states, in col. 2, lines 25-30, that "in order to permit high unit loadings with negligeable compression and to prevent extrusion of the rubberous material from between the plates, while allowing satisfactory deflection characteristics, the bearing must be designed to comply with certain dimensional ratios which have been found to be controlling in such design." (Emphasis added).

Therefore, Hinks teaches against using metallic plates having openings, otherwise the rubber between the metallic plates would extrude through the opening. Hinks teaches that this is undesirable because this would alter the deflection characteristics of the load bearing. Furthermore, if metallic plates with openings (such a wire mesh) were to be used instead of the metallic plates in Hinks, due to the presence of the openings one rubber layer will be able to come in contact with another rubber layer through the openings in the wire mesh and this would increase the overall compression of the load bearings which is indicated in Hinks as being undesirable. Therefore, one of ordinary skill in the art would not be motivated to provide a wire mesh plate in place of the metallic layer or plates of Hinks as this would destroy the intended function of the load bearing in Hinks.

In response to the arguments filed on December 17, 2010, the Examiner contends that "Hinks refers to the prevention of rubber material extruding 'from between the plate' due to compressive force" and thus asserts that "there is no teaching or suggestion that the use of metallic plates with opening would result in the elastomeric material extruding from the plate." *See* Final Office Action at page 10. Appellant respectfully disagrees.

Appellant refers to the statement in col. 2, lines 25-30 in Hinks to specifically show that a rubber material can extrude through an opening be it on the side of plates or through an opening within the plates. If Hinks is already putting extra care for selecting appropriate dimensions to prevent extrusion of rubber between the plates, Hinks would in effect be led to not select plates having openings to avoid extrusion of rubber through the openings.

Therefore, one of ordinary skill in the art would certainly not use plates with metallic openings much less a wire mesh between compressed rubber. This clearly teaches away from providing a wire mesh plate in place of the metallic layer or plates of Hinks as this would destroy the intended function of the load bearing of Hinks.

Furthermore, even if, *arguendo*, one were to make the metallic plates in Hinks with the wire screen disclosed by Hickox, which Applicant does not concede, as stated above, the wire mesh of Hickox being disposed between rubber layers would certainly prevent the formation of a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Furthermore, the rubber being in contact with the wire mesh would prevent any radial flow of gas as the wire mesh would not define a plurality of radially extending gas flow paths.

Consequently, for at least the above reasons, neither Hinks nor Hickox, alone or in combination, disclose, teach or suggest the subject matter recited in claim 1. Therefore, Appellant respectfully submits that claim 23 is patentable over the purported combination of Hinks and Hickox.

Therefore, for at least the above reasons, Appellant respectfully submits that claim 23 is patentable over purported combination of Hinks and Hickox. Thus, it is respectfully requested that the rejection of claim 23 under 35 U.S.C. §103(a) over the purported combination of Hinks and Hickox be withdrawn.

c) Claims 2-4 and 24-26

Claims 2-4 and 24-26 depend, respectively, from claims 1 and 23. Therefore, claims 2-4 and 24-26 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Thus, it is respectfully requested that the rejection of claims 2-4 and 24-26 under 35 U.S.C. §103(a) over Hinks in view of Hickox be withdrawn.

d) Claims 5 and 27

Claims 5 and 27 depend, respectively, from claims 1 and 23. Therefore, claims 5 and 27 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "the metallic member comprises one or more of stainless steel, a nickel-chromium-based alloy, titanium, molybdenum, tantalum, and tungsten," as further required in claims 5 and 27.

Therefore, for these additional reasons, Appellant respectfully submits that claims 5 and 27 are further patentable over Hinks in view of Hickox. Thus, it is respectfully requested that the rejection of claims 5 and 27 under 35 U.S.C. §103(a) over Hinks in view of Hickox be withdrawn.

e) Claims 6 and 28

Claims 6 and 28 depend, respectively, from claims 1 and 23. Therefore, claims 6 and 28 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "the wire mesh has an open mesh area of about 20% to about 80%," as further required in claims 6 and 28. Contrary to Examiner's contention, FIG. 3 in Hickox does not disclose, teach or suggest the range open mesh area between about 20% and about 80%.

Therefore, for these additional reasons, Appellant respectfully submits that claims 6 and 28 are further patentable over Hinks in view of Hickox. Thus, it is respectfully requested that the rejection of claims 6 and 28 under 35 U.S.C. §103(a) over Hinks in view of Hickox be withdrawn.

f) Claims 8 and 30

Claims 8 and 30 depend, respectively, from claims 1 and 23. Therefore, claims 8 and 30 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "the wire mesh includes a crimped weave mesh," as further required in claims 8 and 30.

The Office admits that Hickox does not teach pre-shaping the wires of the wire mesh. However, the Office states that absent a showing to the contrary the article of the applied prior art is identical to or only slightly different than the claimed article. Appellant respectfully submits that it is the Patent Office's burden to establish that the claimed subject matter is anticipated by or obvious over the relied upon reference.

The Examiner contends that claims 8 and 30 are product-by-process claims and states that product-by-process claims are limited by and defined by the process. Appellant respectfully disagrees.

Claims 8 and 30 are not product-by-process claims as they recite a structure "crimped weave mesh."

Therefore, for these additional reasons, Appellant respectfully submits that claims 8 and 30 are further patentable over Hinks in view of Hickox. Thus, it is respectfully requested that the rejection of claims 8 and 30 under 35 U.S.C. §103(a) over the purported combination of Hinks and Hickox be withdrawn.

g) Claims 9 and 31

Claims 9 and 31 depend, respectively, from claims 1 and 23. Therefore, claims 9 and 31 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "wherein the member has an effective thickness of about twice the diameter of the wire constituting the wire mesh," as further required in claims 9 and 31.

In addition, the Examiner in rejecting claims 9 and 31 relies on the theory of inherency by stating that "considering that wires are welded at their intersection, the members would inherently have an effective thickness of about twice the diameter of the wire constituting the wire mesh." (emphasis added).

"In relying upon the theory of inherency, the Office must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). In addition, "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). Clearly, the Office failed to establish that the missing feature in Hickox is "inherent."

The fact that the wires are welded at their intersection does not indicate in any way that the resulting member has an effective thickness of about twice the diameter of the wire constituting the wire mesh. Indeed, the thickness of the screen in Hickox can be different from twice the diameter of the wire constituting the mesh of the screen. There is nothing in Hickox to indicate relative dimensions much less relative thickness of the wire mesh.

Therefore, for these additional reasons, Appellant respectfully submits that claims 9 and 31 are further patentable over Hinks in view of Hickox. Thus, it is respectfully requested

that the rejection of claims 9 and 31 under 35 U.S.C. §103(a) over Hinks in view of Hickox be withdrawn.

h) Claims 10 and 32

Claims 10 and 32 depend, respectively, from claims 1 and 23. Therefore, claims 10 and 32 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "the refractory material can withstand temperatures of up to about 1400 °C," as further required in claims 10 and 32.

Therefore, for these additional reasons, Appellant respectfully submits that claims 10 and 32 are further patentable over Hinks in view of Hickox. Thus, it is respectfully requested that the rejection of claims 10 and 32 under 35 U.S.C. §103(a) over Hinks in view of Hickox be withdrawn.

C. Rejection Under 35 U.S.C. § 103(a) of Claims 4, 5, 7, 26, 27 and 29 over Hinks in view of Hickox and further in view of Donguy.

1. The Cited Reference

a) Hinks

(discussed in the above paragraphs)

b) Hickox

(discussed in the above paragraphs)

c) Donguy

Donguy discloses a flexible spherical joint or bearing comprising two end pieces connected by a stack of interconnected alternate layers of a flexible materialsuch as an elastomer and of a strong material such as a metallic material and at least one cavity filled with an incompressible fluid and extending between the two end pieces without the interposition of elastomer. Such a bearing is used for connecting a helicopter rotor blade to the rotor hub of the helicopter (see, the Abstract in Donguy).

2. Claims 4, 5, 7, 26, 27 and 29 are not obvious in view of Hinks, Hickox and Donguy

a) Claims 4 and 26

Claims 4 and 26 depend, respectively, from claims 1 and 23. Therefore, claims 4 and 26 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

The Office acknowledges that the combination of Hinks and Hickox does not disclose stainless steel.

Donguy does not cure the deficiencies noted above in the combination of Hinks and Hickox. Donguy is relied upon as allegedly disclosing stainless steel. Donguy does not disclose, teach or even suggest the subject matter recited in claims 1 and 23.

Consequently, none of Hinks, Hickox and Donguy, alone or in combination, disclose, teach or suggest the subject matter recited in claims 4 and 26. Therefore, Appellant respectfully submits that claims 4 and 26 are patentable over Hinks in view of Hickox and further in view of Donguy. Thus, it is respectfully requested that the rejection of claims 4 and 26 under 35 U.S.C. §103(a) over Hinks in view of Hickox and further in view of Donguy be withdrawn.

b) Claims 5 and 27

Claims 5 and 27 depend, respectively, from claims 1 and 23. Therefore, claims 5 and 27 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Donguy does not cure the deficiencies noted above in the combination of Hinks and Hickox. Donguy was relied upon as allegedly disclosing stainless steel. Donguy does not disclose, teach or suggest the subject matter recited in claim 1 or claim 23.

Furthermore, contrary to the Office contention, there is no suggestion, motivation or reason to employ the "stainless steel" of Donguy in the manufacture of the wire mesh of Hickox as the wire mesh of Hickox is imbedded within an elastomer. Indeed, the elastomer provides the desired corrosion protection to the metallic wire mesh of Hickox without the need of emplying stainless steel.

Consequently, none of Hinks, Hickox and Donguy, alone or in combination, disclose, teach or suggest the subject matter recited in claims 5 and 27. Therefore, Appellant respectfully submits that claims 5 and 27 are patentable over Hinks in view of Hickox and

further in view of Donguy. Thus, it is respectfully requested that the rejection of claims 5 and 27 under 35 U.S.C. §103(a) over Hinks in view of Hickox and further in view of Donguy be withdrawn.

c) Claims 7 and 29

Claims 7 and 29 depend, respectively, from claims 1 and 23. Therefore, claims 7 and 29 are patentable over Hinks in view of Hickox at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, neither Hinks nor Hickox, alone or in combination, disclose, teach or suggest "the member has an effective thickness of about 1 mm to about 6 mm," as further required in claims 7 and 29. As conceded in the Final Office Action, Hickox does not mention a specific thickness range. Donguy was relied upon as allegedly disclosing member thickness. Donguy fails to cure the deficiencies noted above in the combination of Hinks and Hickox. Donguy does not disclose, teach or suggest the subject matter recited in claim 1.

Consequently, none of Hinks, Hickox and Donguy, alone or in combination, disclose, teach or suggest the subject matter recited in claims 7 and 29. Therefore, Appellant respectfully submits that claims 7 and 29 are patentable over Hinks in view of Hickox and further in view of Donguy. Thus, it is respectfully requested that the rejection of claims 7 and 29 under 35 U.S.C. §103(a) over Hinks in view of Hickox and further in view of Donguy be withdrawn.

D. Rejection Under 35 U.S.C. § 103(a) of Claims 1-6, 8-10, 23-28 and 30-32 over Hickox in view of Hinks

1. The Cited References

a) Hickox

(discussed in the above paragraphs)

b) Hinks

(discussed in the above paragraphs)

2. Claims 1-6, 8-10, 23-28 and 30-32 are not obvious over Hickox in view of Hinks

a) Claim 1

Independent claim 1 is directed to an annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough, wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Claim 1 further specifies that the annular shim member is substantially planar.

The Examiner contends that Hickox discloses a shim member is a metallic wire screen comprising openings. The Office contends that the wire screen openings correspond to the claimed plurality of radially extending gas flow paths. Appellant respectfully disagrees.

The plurality of wire screen openings do not correspond to the plurality of radially extending gas flow paths. The term "radially" means along or in a direction of a radius. Clearly, the openings within the wire mesh of Hickox are not radially extending flow paths (in a direction of a radius of an annular wire mesh). Indeed, as can be clearly seen in FIG. 3 of Hickox, all of the segments of the mesh 9 are welded at intersections 4. Therefore, the mesh in Hickox does not have a plurality of radially extending gas flow paths for communicating a radially interior side of the mesh with a radially exterior side of the mesh. Indeed, the presence of welds at intersection 4 of the wire mesh would not allow a flow of gas to pass radially above the first surface or below the second surface.

In addition, as described in col. 3, lines 26-40, Hickox teaches that a "valuable and unexpected result" of the method of manufacturing the flexible bearings is that "the layers 7 of elastomer extrude through the openings in the screen or cloth reinforcing layers and weld together." Thus, there are clearly no gas flow paths in the Hickox bearing, since the adjacent elastomer layers extrude into any openings and weld together, and Hickox therefore further teaches away from the present invention.

Furthermore, as conceded by the Office, Hickox does not disclose a "substantially planar" shim, as presently claimed. Hickox discloses a frusto-conical annular wire screen. The Office, however, contends that Hinks discloses that it is known in the thrust bearing art to construct a bearing in any desired shape such as conical or planar. The Office contends

that it would have been obvious to one of ordinary skill in the art to make the shim member in any bearing shape such as planar.

In response to the arguments filed on December 17, 2010, the Examiner contends that Hinks discloses that it is known in the thrust bearing art to construct a thrust bearing in any desired shape such as frusto-conical or planar and thus it would have been obvious to one of ordinary skill in the art to make the shim member in Hickox in any known shape such as planar. Applicant respectfully disagrees.

There is no suggestion, motivation or reason to provide a wire screen with a planar configuration as Hickox teaches a particular type of bearing, intended for use as a flexible joint between a rocket case and a movable thrust nozzle, and in which the layers conform to surfaces of concentric spheres (see, e.g., col. 1, lines 37-51; col. 2, lines 50-58).

In FIG. 7, Hinks appears to show alternate planar layers of metal and elastomer bonded to each other. FIG. 7 in Hinks shows the bearing being provided with a central aperture that is defined by the alternate layers of elastomer and metal (see, col. 9, lines 30-42 in Hinks). However, there is no suggestion, motivation or reason to modify the conical wire mesh of Hickox and provide a wire mesh with a planar configuration. In fact, the flexible bearing of Hickox is clearly conical. Therefore, the reinforcing material or wire screen 9 has also a conical shape. There is absolutely no reason to use an annular flat configuration as shown in FIG. 7 in Hinks in the conical bearing of Hickox.

If one were to use the annular flat configuration of Hinks in the bearing of Hickox, which Applicant does not concede is possible, the annular flat configuration of Hinks would have to be reshaped into a conical configuration so as to be incorporated into the bearing of Hickox. However reshaping the annular configuration of Hinks into a conical shape would result in a conformation that is completely different from the claimed annular shim member.

In addition, even if, *arguendo*, one were to modify the conical wire mesh of Hickox and provide a planar wire mesh, which Applicant does not concede, the wire mesh of Hickox being disposed between rubber layers of Hinks would certainly prevent the formation of a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Furthermore, the rubber being in contact with the wire mesh would prevent any radial flow of gas as the wire mesh would not define a plurality of radially extending gas flow paths.

Consequently, for at least the above reasons, neither Hinks nor Hickox, alone or in combination, disclose, teach or suggest the subject matter recited in claims 1 and 23.

Therefore, Applicant respectfully submits that claims 1 and 23 are patentable over Hickox in view of Hinks.

Therefore, for at least the above reasons, Appellant respectfully submits that claim 1 is patentable over Hickox in view of Hinks. Thus, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §103(a) over Hickox in view of Hinks be withdrawn.

b) Claim 23

Independent claim 23 is directed to an annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough, wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths, the annular shim member being substantially planar.

Claim 23 is patentable over Hickox in view of Hinks for at least similar reasons provided above with respect to claim 1.

The Office contends that Hickox discloses a shim member is a metallic wire screen comprising openings. The Office contends that the wire screen openings correspond to the claimed plurality of radially extending gas flow paths. Applicant respectfully disagrees.

The plurality of wire screen openings do not correspond to the plurality of radially extending gas flow paths. The term "radially" means along or in a direction of a radius. Clearly, the openings within the wire mesh of Hickox are not radially extending flow paths (in a direction of a radius of an annular wire mesh). Indeed, as can be clearly seen in FIG. 3 of Hickox, all of the segments of the mesh 9 are welded at intersections 4. Therefore, the mesh in Hickox does not have a plurality of radially extending gas flow paths for communicating a radially interior side of the mesh with a radially exterior side of the mesh. Indeed, the presence of welds at intersection 4 of the wire mesh would not allow a flow of gas to pass radially above the first surface and below the second surface.

In addition, as described in col. 3, lines 26-40, Hickox teaches that a "valuable and unexpected result" of the method of manufacturing the flexible bearings is that "the layers 7 of elastomer extrude through the openings in the screen or cloth reinforcing layers and weld together." Thus, there are clearly no gas flow paths in the Hickox bearing, since the adjacent elastomer layers extrude into any openings and weld together, and Hickox therefore further teaches away from the present invention.

Furthermore, as conceded by the Office, Hickox does not disclose a "substantially planar" shim, as presently claimed. Hickox discloses a frusto-conical annular wire screen. The Office, however, contends that Hinks discloses that it is known in the thrust bearing art

to construct a bearing in any desired shape such as conical or planar. The Office contends that it would have been obvious to one of ordinary skill in the art to make the shim member in any bearing shape such as planar.

In response to the arguments filed on December 17, 2010, the Examiner contends that Hinks discloses that it is known in the thrust bearing art to construct a thrust bearing in any desired shape such as frusto-conical or planar and thus it would have been obvious to one of ordinary skill in the art to make the shim member in Hickox in any known shape such as planar. Applicant respectfully disagrees.

There is no suggestion, motivation or reason to provide a wire screen with a planar configuration as Hickox teaches a particular type of bearing, intended for use as a flexible joint between a rocket case and a movable thrust nozzle, and in which the layers conform to surfaces of concentric spheres (see, e.g., col. 1, lines 37-51; col. 2, lines 50-58).

In FIG. 7, Hinks appears to show alternate planar layers of metal and elastomer bonded to each other. FIG. 7 in Hinks shows the bearing being provided with a central aperture that is defined by the alternate layers of elastomer and metal (see, col. 9, lines 30-42 in Hinks). However, there is no suggestion, motivation or reason to modify the conical wire mesh of Hickox and provide a wire mesh with a planar configuration. In fact, the flexible bearing of Hickox is clearly conical. Therefore, the reinforcing material or wire screen 9 has also a conical shape. There is absolutely no reason to use an annular flat configuration as shown in FIG. 7 in Hinks in the conical bearing of Hickox.

If one were to use the annular flat configuration of Hinks in the bearing of Hickox, which Applicant does not concede is possible, the annular flat configuration of Hinks would have to be reshaped into a conical configuration so as to be incorporated into the bearing of Hickox. However reshaping the annular configuration of Hinks into a conical shape would result in a conformation that is completely different from the claimed annular shim member.

In addition, even if, *arguendo*, one were to modify the conical wire mesh of Hickox and provide a planar wire mesh, which Applicant does not concede, the wire mesh of Hickox being disposed between rubber layers of Hinks would certainly prevent the formation of a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Furthermore, the rubber being in contact with the wire mesh would prevent any radial flow of gas as the wire mesh would not define a plurality of radially extending gas flow paths.

Consequently, for at least the above reasons, neither Hinks nor Hickox, alone or in combination, disclose, teach or suggest the subject matter recited in claims 1 and 23. Therefore, Applicant respectfully submits that claims 1 and 23 are patentable over Hickox in view of Hinks.

Therefore, for at least the above reasons, Appellant respectfully submits that claim 23 is patentable over Hickox in view of Hinks. Thus, it is respectfully requested that the rejection of claim 23 under 35 U.S.C. §103(a) over Hickox in view of Hinks be withdrawn.

c) Claims 2-4 and 24-26

Claims 2-4 and 24-26 depend, respectively, from claims 1 and 23. Therefore, claims 2-4 and 24-26 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Thus, it is respectfully requested that the rejection of claims 2-4 and 24-26 under 35 U.S.C. §103(a) over Hickox in view of Hinks be withdrawn.

d) Claims 5 and 27

Claims 5 and 27 depend, respectively, from claims 1 and 23. Therefore, claims 5 and 27 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "the metallic member comprises one or more of stainless steel, a nickel-chromium-based alloy, titanium, molybdenum, tantalum, and tungsten," as further required in claims 5 and 27.

Therefore, for these additional reasons, Appellant respectfully submits that claims 5 and 27 are further patentable over Hickox in view of Hinks. Thus, it is respectfully requested that the rejection of claims 5 and 27 under 35 U.S.C. §103(a) over Hickox in view of Hinks be withdrawn.

e) Claims 6 and 28

Claims 6 and 28 depend, respectively, from claims 1 and 23. Therefore, claims 6 and 28 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "the wire mesh has an open mesh area of about 20% to about 80%," as further required in claims 6 and 28. Contrary to Examiner's contention, FIG. 3 in Hickox does not disclose, teach or suggest the range open mesh area between about 20% and about 80%.

Therefore, for these additional reasons, Appellant respectfully submits that claims 6 and 28 are further patentable over Hickox in view of Hinks. Thus, it is respectfully requested that the rejection of claims 6 and 28 under 35 U.S.C. §103(a) over Hickox in view of Hinks be withdrawn.

f) Claims 8 and 30

Claims 8 and 30 depend, respectively, from claims 1 and 23. Therefore, claims 8 and 30 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "the wire mesh includes a crimped weave mesh," as further required in claims 8 and 30.

In response to the arguments filed on April 29, 2009, the Office admits that Hickox does not teach pre-shaping the wires of the wire mesh. However, the Office states that absent a showing to the contrary the article of the applied prior art is identical to or only slightly different than the claimed article. Appellant respectfully submits that it is the Patent Office's burden to establish that the claimed subject matter is anticipated by or obvious over the relied upon reference.

The Examiner contends that claims 8 and 30 are product-by-process claims and states that product-by-process claims are limited by and defined by the process. Appellant respectfully disagrees.

Claims 8 and 30 are not product-by-process claims as they recite a structure "crimped weave meash."

Therefore, for these additional reasons, Appellant respectfully submits that claims 8 and 30 are further patentable over Hickox in view of Hinks. Thus, it is respectfully requested that the rejection of claims 8 and 30 under 35 U.S.C. §103(a) over Hickox in view of Hinks be withdrawn.

g) Claims 9 and 31

Claims 9 and 31 depend, respectively, from claims 1 and 23. Therefore, claims 9 and 31 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, Hickox does not disclose, teach or suggest "wherein the member has an effective thickness of about twice the diameter of the wire constituting the wire mesh," as further required in claims 9 and 31.

In addition, the Examiner in rejecting claims 9 and 31 relies on the theory of inherency by stating that "considering that wires are welded at their intersection, the members would inherently have an effective thickness of about twice the diameter of the wire constituting the wire mesh." (emphasis added).

"In relying upon the theory of inherency, the Office must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). In addition, "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson,* 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). Clearly, the Office failed to establish that the missing feature in Hickox is "inherent."

The fact that the wires are welded at their intersection does not in any way mean that the resulting member has an effective thickness of about twice the diameter of the wire constituting the wire mesh. Indeed, the thickness of the screen in Hickox can be different from twice the diameter of the wire constituting the mesh of the screen. There is nothing in Hickox to indicate relative dimensions much less relative thickness of the wire mesh.

Therefore, for these additional reasons, Appellant respectfully submits that claims 9 and 31 are further patentable over Hickox in view of Hinks. Thus, it is respectfully requested that the rejection of claims 9 and 31 under 35 U.S.C. §103(a) over Hickox in view of Hinks be withdrawn.

h) Claims 10 and 32

Claims 10 and 32 depend, respectively, from claims 1 and 23. Therefore, claims 10 and 32 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.
Indeed, Hickox does not disclose, teach or suggest "the refractory material can withstand temperatures of up to about 1400 °C," as further required in claims 10 and 32.

Therefore, for these additional reasons, Appellant respectfully submits that claims 10 and 32 are further patentable over Hickox in view of Hinks. Thus, it is respectfully requested

that the rejection of claims 10 and 32 under 35 U.S.C. §103(a) over Hickox in view of Hinks be withdrawn.

E. Rejection Under 35 U.S.C. § 103(a) of Claims 4, 5, 7, 26, 27 and 29 over Hinks in view of Hickox and further in view of Donguy.

1. The Cited Reference

a) Hinks

(discussed in the above paragraphs)

b) Hickox

(discussed in the above paragraphs)

c) Donguy

Donguy discloses a flexible spherical joint or bearing comprising two end pieces connected by a stack of interconnected alternate layers of a flexible materialsuch as an elastomer and of a strong material such as a metallic material and at least one cavity filled with an incompressible fluid and extending between the two end pieces without the interposition of elastomer. Such a bearing is used for connecting a helicopter rotor blade to the rotor hub of the helicopter (see, the Abstract in Donguy).

2. Claims 4, 5, 7, 26, 27 and 29 are not obvious in view of Hinks, Hickox and Donguy

a) Claims 4 and 26

Claims 4 and 26 depend, respectively, from claims 1 and 23. Therefore, claims 4 and 26 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

The Office acknowledges that the combination of Hinks and Hickox does not disclose stainless steel.

Donguy does not cure the deficiencies noted above in the combination of Hinks and Hickox. Donguy is relied upon as allegedly disclosing stainless steel. Donguy does not disclose, teach or even suggest the subject matter recited in claims 1 and 23.

Consequently, none of Hinks, Hickox and Donguy, alone or in combination, disclose, teach or suggest the subject matter recited in claims 4 and 26. Therefore, Appellant respectfully submits that claims 4 and 26 are patentable over Hickox in view of Hinks and further in view of Donguy. Thus, it is respectfully requested that the rejection of claims 4

and 26 under 35 U.S.C. §103(a) over Hickox in view of Hinks and further in view of Donguy be withdrawn.

b) Claims 5 and 27

Claims 5 and 27 depend, respectively, from claims 1 and 23. Therefore, claims 5 and 27 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Donguy does not cure the deficiencies noted above in the combination of Hinks and Hickox. Donguy was relied upon as allegedly disclosing stainless steel. Donguy does not disclose, teach or suggest the subject matter recited in claim 1 or claim 23.

Furthermore, contrary to the Office contention, there is no suggestion, motivation or reason to employ the "stainless steel" of Donguy in the manufacture of the wire mesh of Hickox as the wire mesh of Hickox is imbedded within an elastomer. Indeed, the elastomer provides the desired corrosion protection to the metallic wire mesh of Hickox without the need of emplying stainless steel.

Consequently, none of Hinks, Hickox and Donguy, alone or in combination, disclose, teach or suggest the subject matter recited in claims 5 and 27. Therefore, Appellant respectfully submits that claims 5 and 27 are patentable over Hickox in view of Hinks and further in view of Donguy. Thus, it is respectfully requested that the rejection of claims 5 and 27 under 35 U.S.C. §103(a) over Hickox in view of Hinks and further in view of Donguy be withdrawn.

c) Claims 7 and 29

Claims 7 and 29 depend, respectively, from claims 1 and 23. Therefore, claims 7 and 29 are patentable over Hickox in view of Hinks at least by virtue of their dependence on claims 1 and 23 and for the additional subject matter recited therein.

Indeed, neither Hinks nor Hickox, alone or in combination, disclose, teach or suggest "the member has an effective thickness of about 1 mm to about 6 mm," as further required in claims 7 and 29. As conceded in the Final Office Action, Hickox does not mention a specific thickness range. Donguy was relied upon as allegedly disclosing member thickness. Donguy fails to cure the deficiencies noted above in the combination of Hinks and Hickox. Donguy does not disclose, teach or suggest the subject matter recited in claim 1.

Consequently, none of Hinks, Hickox and Donguy, alone or in combination, disclose, teach or suggest the subject matter recited in claims 7 and 29. Therefore, Appellant respectfully submits that claims 7 and 29 are patentable over Hickox in view of Hinks and

further in view of Donguy. Thus, it is respectfully requested that the rejection of claims 7 and 29 under 35 U.S.C. §103(a) over Hickox in view of Hinks and further in view of Donguy be withdrawn.

CONCLUSION

For the above reasons, Appellant respectfully requests this Honorable Board to reverse the rejections of claims 1-10 and 23-32.

Date: July 1, 2011

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VIII. CLAIMS APPENDIX - 37 C.F.R. §41.37(c)(1)(viii)

Claims 1-10 and 23-32 are as follows:

1. An annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough,

wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member, the annular shim member being substantially planar.

2. The member according to claim 1, wherein the metallic material is a bare metallic material.

3. The member according to claim 1, wherein the metallic material is a wire mesh.

4. The member according to claim 3, wherein the metallic material is a refractory material.

5. The member according to claim 3, wherein the metallic member comprises one or more of stainless steel, a nickel-chromium-based alloy, titanium, molybdenum, tantalum, and tungsten.

6. The member according to claim 3, wherein the wire mesh has an open mesh area of about 20% to about 80%.

7. The member according to claim 3, wherein the member has an effective thickness of about 1 mm to about 6 mm.

8. The member according to claim 3, wherein the wire mesh includes a crimped weave mesh.

9. The member according to claim 3, wherein the member has an effective thickness of about twice the diameter of the wire constituting the wire mesh.

10. The member according to claim 4, wherein the refractory material can withstand temperatures of up to about 1400° C.

11. – 22. (Cancelled)

23. An annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough,

wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths, the annular shim member being substantially planar.

24. The member according to claim 23, wherein the metallic material is a bare metallic material.

25. The member according to claim 23, wherein the metallic material is a wire mesh.

26. The member according to claim 25, wherein the metallic material is a refractory material.

27. The member according to claim 25, wherein the metallic member comprises one or more of stainless steel, a nickel-chromium-based alloy, titanium, molybdenum, tantalum, and tungsten.

28. The member according to claim 25, wherein the wire mesh has an open mesh area of about 20% to about 80%.

29. The member according to claim 25, wherein the member has an effective thickness of about 1 mm to about 6 mm.

30. The member according to claim 25, wherein the wire mesh includes a crimped weave mesh.

31. The member according to claim 25, wherein the member has an effective thickness of about twice the diameter of the wire constituting the wire mesh.

32. The member according to claim 26, wherein the refractory material can withstand temperatures of up to about 1400° C.

IX. EVIDENCE APPENDIX – 37 C.F.R. § 41.37(c)(1)(ix)

None.

X. RELATED PROCEEDINGS APPENDIX – 37 C.F.R. § 41.37(c)(1)(x)

None.